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Price and Quality Competitiveness of Socialist Countries' Exports

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The centrally planned economies sell exports of raw materials, food, and some manufacturing goods at world market prices. Most of their exports of manufactured goods are underpriced — mostly because they are inferior in quality.

Drabek and Olechowski analyzed pricing of the centrally planned economies (CPEs) in the highly competitive export markets of the EC countries in the first half of the 1980s.

They found that the CPEs' export prices were lower than prices in both developed and developing countries. Manufactured goods from CPEs were underpriced an average 31 to 45 percent — even more on some commodities.

Protection in the EC countries is probably not a factor in CPE underpricing of manufactured goods. CPE exports of raw materials, food, and some manufactured goods tended to be sold at world market prices, as one would expect from profit-maximizing firms in competitive markets.

Typically nontariff barriers would raise prices on CPE exports. If the CPEs' exports of manufactured goods were indeed subject to higher levels of protection, as the CPEs often claim, they should have been able to upgrade their manufactured exports and raise their prices. Instead, their prices were lower than their competitors'.

The systematic "underpricing" of manufactured exports could not be also explained by a deliberate policy of CPEs to penetrate Western markets. Detailed analysis of average price ratios and market shares does not reveal any evidence of obvious and systematic "underpricing" of these commodities.

The CPEs' inability to upgrade manufactured exports that are subject to quotas suggests serious quality constraints on exports of manufactured goods. Moreover, the systematic "underpricing" was characteristic for manufacturing exports, which are generally subject to great variations in quality and product differentiation, but not for exports of raw materials and agricultural products, which are generally much more homogenous.

The CPEs appear to underprice their manufactured exports not because of cost advantages that make them more competitive, but because most of their manufactured goods are inferior in quality to their competitors'.

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Table of Contents

I.	Introduction	1
II.	Results of Earlier Studies	2
III.	Manufacturing Costs	4
IV.	Measures of Price Competitiveness	7
V.	Treatment of Product Quality	7
VI.	Data	9
VII.	Estimation of Unit Value Indices	10
VIII.	Sensitivity Tests	12
IX.	Impact of EEC Protection on Price Competitiveness of CPEs	15
X.	Effect of CPEs' Price Policy	17
XI.	Summary and Conclusions	19
	References	21

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I. INTRODUCTION

The economic performance of centrally planned economies (CPEs) of Eastern Europe has been extremely disappointing over the period in which they experimented with different forms of planning mechanisms. Nowhere was the failure most evident than in their export performance in highly competitive world markets, where the CPEs as a whole have been losing market shares not only to producers of highly developed countries, but also to newly industrialized countries. The consequence of this poor export performance is very serious; the CPEs have been unable to generate sufficient foreign exchange for imports and their ability to service their debt has been greatly impaired.

The poor export performance of these countries raises the important question of competitiveness of CPEs' exports in the world markets. Demand-side factors have been evaluated in the literature quite extensively, e.g. Wolf (1976), Wipf and Brada (1975). Factors affecting export volumes through the supply-side, however, are less well known, even though there is considerable amount of anecdotal evidence and some econometric simulations. We hope to provide in this paper some hard-core evidence on the competitiveness of CPEs' exports as a factor determining their growth.

Export competitiveness typically refers to many features of export performance--speed of delivery, post-sale service, availability of spare parts, quality of products, export financing, administrative procedures, etc. However, this paper focuses only on one, but an extremely important element of export competitiveness--the price performance of the CPEs. Clearly, their ability to sell their exports attractively in the face of tough competition is in serious doubt, given their poor record of export performance in the past. We venture to suggest that CPEs have a serious constraint on their pricing behaviour - poor quality of manufactured goods.

What makes this study very unusual and interesting is the widely-accepted belief that the poor export performance of CPEs in highly competitive world markets is a systemic problem, one which does not typically affect all countries and economies. The systemic factors are believed to profoundly affect particularly those activities, in which value added is larger in comparison to those which require a relatively small degree of processing and, therefore, limited contribution of production factors. On a highly aggregate level this would be translated into low competitiveness of manufactured goods on the one hand and relatively better competitiveness of raw materials and these intermediate goods, which do not require much processing. As Frank Holzman once argued, "CPEs have a comparative disadvantage in the production of manufactured commodities".^{1/}

^{1/} We are grateful to Stuart Brown for reminding us this old argument of Frank Holzman, who has taken it even further to suggest that CPEs have a "saleability and terms of trade illusions".

The scope of this paper is narrow; it seeks to document the pricing behavior of the CPEs in world markets and to establish whether any common and systematic features can be found in their pricing behavior. An attempt will be also made to assess the likely forces underlying the price formation process. Among the forces, our main interest is on the impact of poor quality of CPEs' exports. This assessment will be by necessity crude and incomplete; a rigorous, econometric treatment of the price formation process would require detailed information on domestic and foreign production costs and capacity utilization, which is not available and would be extremely expensive to collect. Moreover, for reasons explained in the text, the value of such an approach would be extremely limited. Not included in this paper is also an assessment of the effect of price competitiveness on export volumes, a task which would be clearly desirable to undertake but would be beyond the scope of this paper.

The paper is divided into nine sections. The following Section 2 briefly summarizes the main results of the literature. Sections 3, 4 and 5 delineate the methodological issues of price competitiveness and define the relevant concepts. Data used in this study are described in Section 6. The price performance of CPEs in world markets, the main findings of the study, are presented in Sections 7 and 8. The results are evaluated by considering the likely effects on export prices of external barriers (Section 9), price policy (Section 10). Summary and evaluation of the results are part of Section 11.

II. RESULTS OF EARLIER STUDIES

Study of export competitiveness of socialist countries in world markets is not new. Several attempts to evaluate export competitiveness of these countries have been already made in the past, primarily in Eastern Europe. In Czechoslovakia, for example, a detailed and comprehensive analysis of the study was undertaken already in the 1960's [see, for example, Klacek and Pleva (1967)]. Unfortunately, their study covered only the price competitiveness of Czechoslovak exports in the EEC market and the period 1955-64 and selected manufacturing exports. Their approach was similar to the one adopted in this paper; they estimated export prices realized by Czechoslovak exporters in the EEC market and compared them with export prices of countries for the same products of countries of the European Free Trade Association (EFTA). Their main findings are shown in Table 1 below. Even though their study is mainly of historical interest, the comparison of their results with ours may provide an interesting picture of socialist countries' export competitiveness over time.

**Table 1: CZECHOSLOVAKIA: "UNDERPRICING" OF SELECTED EXPORTS
RELATIVE TO EFTA COMPETITORS IN THE EEC MARKET, 1960-64**

	Export prices as % of exports prices of EFTA	
	1960	1964
Ball bearings	64.2	59.2
Passenger cars	51.2	49.0
Tractors	62.4	68.0
Metal-working machines	45.7	43.7
Textile machines	92.9	153.3
Sewing machines	34.0	64.4
Electrical motors	95.5	38.2
Seamless pipes	41.0	30.1
Steel	40.3	31.7
Hard coal	86.5	102.0
Paper	103.0	103.2
Semiprocessed wood	96.2	82.0
Cotton textiles	41.3	69.4
Pharmaceuticals	18.4	15.0
Table glass	99.0	94.1
Furniture	20.9	34.4
Shoes	16.0	26.5

Source: Klacek and Pleva (1967), pp. 616-625.

In sum, export prices realized by Czechoslovakia in the EEC market were lower by the following percentages of the EFTA export prices:

Engineering products	30-60%
Steel products	50-80%
Raw materials	70-100%
Products of light industry	20-90%

In interpreting their findings, the authors have suggested that poor quality of Czechoslovak exports was the primary reason for the relative "underpricing." More recent literature has addressed the issue of competitiveness of socialist countries' exports only indirectly through econometric estimations of developed countries' demand functions and through estimations of the so-called "implicit trade subsidies" in the CMEA trade. The estimations of demand functions has been based on the notion that the socialist countries have something of a "monopolistic" position in the supply of low-quality manufactures in the world market, and therefore would be more likely to face fairly inelastic Western demand for their exports. The estimates of

the elasticities vary greatly among authors, and some writers even suggested the elasticities well below unity.^{2/}

The quality factor has played also a prominent role in the estimations by Marrese and Vanous (1983) of "implicit trade subsidies" in CMEA trade. They accepted the notion that the socialist countries can sell their products in competitive markets only if they offer substantial price discounts. Even though there is considerable amount of anecdotal evidence and evidence provided from engineering and business studies of poor quality of manufactured goods produced by the CPEs (e.g. Hill, 1980), it is unclear how the poor quality is translated into the pricing policy and performance of these countries. Marrese and Vanous could therefore make only assumptions about the (average) rates of price discounts for individual exports and different time periods.

III. MANUFACTURING COSTS

In theory, the pricing behavior of the CPEs in world markets should not fundamentally differ from the practices of other countries, and the CPEs' export prices in these markets should not, therefore, significantly deviate from ruling world prices. The CPEs are typically considered to be "small countries", which face more or less perfectly elastic demand for their exports in world markets. Thus, prices at which they sell identical exports should be equal to world prices unless the CPEs producers/exporters fail to maximize profits.^{3/}

In practice, however, countries are often strapped for foreign exchange, and they may try to sell their exports below the prices of their competitors. Under the "small country" assumption, they will gain market shares to the extent limited by their export capacities and their production costs. The cost-price relationship is particularly weak in the CPEs, which not only face considerable balance of payments difficulties and hence the need for additional foreign exchange, but they have specific constraints of their own. The general belief among experts on central planning is that foreign trade decisions are not, and indeed cannot be, entirely based on profitability considerations. The reasons are well known; domestic prices and exchange rates are seriously distorted and cannot be used in the efficiency calculus, and shadow pricing on the level of each enterprise and for each product is

^{2/} See, for example, Dlouhy and Dyba (1984). In cases of estimations leading to higher elasticities such as those reported in Marrese and Vanous (1983, p. 96), their authors interpreted their results as applicable only to marginal changes in the volume of trade. They suggested that elasticities would be considerably below unity for any sharp increase in the volume of exports.

^{3/} There are undoubtedly some markets which can be influenced by the entry of the CPEs. The example of Soviet oil and natural gas and other minerals come, of course, to mind. Nevertheless, these tend to be more the exception than the rule.

practically impossible. The planners, therefore, have to make various rational "shortcuts" such as shadow pricing for larger product groups. While these may avoid "white elephants" among exports, they cannot prevent micro-distortions on the product level.

To suggest that profitability plays a role in export decisions, however, implies that internationally competitive prices reflect internationally competitive costs. For reasons mentioned above, the assessment of manufacturing costs in the CPEs is extremely difficult. Nevertheless, the indications are that manufacturing costs in Eastern Europe and the Soviet Union are not very favorable and, consequently, that the international competitiveness of their exports of manufactures is by and large very poor. Even though real wages in the CPEs are low in comparison to developed countries, and in at least some of them they have been falling, as we argue further below, these cost advantages vis-a-vis developed countries are being lost to many less developed countries (LDCs). This reflects high degree of substitutability between exports of the CPEs and those of LDCs [Poznanski (1986)]. This in turn implies highly similar export structures of the CPEs and LDCs and, ceteris paribus, high values for export demand elasticities.^{4/}

The evidence about low international competitiveness of East European exports of manufactured goods due to relatively high production costs comes primarily from two sources--extremely poor total factor productivity (TFP) performance combined with high domestic resource costs (DRCs), and from relatively high unit labor costs. The TFP indicator is a good proxy for changes in manufacturing costs since improvement in TFP implies a reduction in the unit costs of production. This is a particularly valuable feature of the indicator in view of limited availability of data on unit labor costs and serious difficulties of their interpretation. Unfortunately, studies of TFP and DRCs have been so far conducted only for a few socialist countries (see, e.g., Nishimizu and Page, 1986). A recent World Bank study of industrial performance in Hungary has found that a majority of manufacturing sectors had DRCs clustered around the value of one, and only few were unambiguously competitive (World Bank, 1988). Moreover, several industries which were found potentially competitive showed a low or even negative TFP performance, which suggest they would lose their competitive edge if the trend were to continue.^{5/}

The picture emerging from the sketchy evidence of relative unit labor costs is also highly unfavorable for the CPEs. Recent official estimates of the average real wage in Hungary, by all accounts a "middle-income CPE," were put by the Government to amount in 1988 to only \$160 a month before taxes and \$127-\$129 a month after deduction of taxes and social security and pension benefits. According to the same source, this corresponded to the average

^{4/} The comparison is made here between CPEs and LDCs other than NICs, whose exports are more quality-competitive.

^{5/} The calculations of DRCs are sensitive to the quality of data. For example, if an adjustment were to be made for differences between CMEA and world prices, the DRC cutoff point for internationally competitive activities would have to be correspondingly adjusted and the picture would be even bleaker. The picture may be even bleaker for other CPEs. Some observers believe that DRCs for Hungary may be more favourable than in other socialist countries.

level of real wages in 1973. While direct East-West comparisons are complicated by different procedures in labor remunerations, methods of wage determination and size of Government contributions, the Hungarian figures are quite clearly well below average real wages in most OECD countries. Moreover, in contrast to LDCs, the small CPEs have benefited from favorable pricing by the Soviet Union for energy supplies, which reflected closely neither the movements of world prices nor the rapidly rising production costs (Tretyakova and Heinemeier, 1986).

However, the competitive edge was also probably lost to most developing countries where average wages tend to be lower.^{6/} Whatever advantages in terms of lower unit labor costs, they have been offset by very poor labor productivity. A detailed comparative study of productivity by Bergson (1987) showed that output per worker in socialist countries, as exemplified by the USSR, Hungary, Poland (and Yugoslavia), fell short systematically of those in developed market economies such as the US, the UK, Italy or Spain. In addition, while some of these differences could be explained by differences in capital and land-labor ratios, he attributed labor productivity (i.e. output per man) differences to differences in efficiency. These findings imply, *ceteris paribus*, higher production costs in the CPEs in comparison to developed market economies. The literature has so far identified only very few sectoral exceptions in this pattern. A relatively favorable productivity growth has taken place in Eastern Europe and the Soviet Union throughout the 1970s in the chemical and petrochemical industries (Rajana, 1975), a finding confirmed later by Desai (1985).

The result of all these trends, which were brought about primarily by wrong choices of technology, poor incentives, infrastructural bottlenecks and manpower shortages, was a level of production costs that was typically significantly above the optimum and "the best-practices abroad".^{7/} Interesting, albeit limited evidence of unfavorable trends in production costs has been obtained from cost functions estimated for Soviet iron and steel industry, arguably the "showcase" of the Soviet technological achievements (see, for example, Amann, Cooper and Davies, 1976). ZumBrunnen and Osleeb (1986) estimated that significant cost savings could be obtained from changes in production technology, consolidation of the industry and other forms of restructuring. Moreover, since we also know that during the period for which we shall carry out our analysis (1982-84) production costs were most likely rising in all countries (see e.g. Stepanek, 1988), we do not have any strong reason to believe that the CPEs commanded any significant cost advantage in the world markets for manufactures. On the contrary, the opposite was quite likely the case.

^{6/} Due to the methodological differences in wage determination in the CPEs, the Hungarian figures are of particular interest since distortions in product and factor prices are most likely least severe in comparison to other CPEs. The figures given in the text were reported in Nepszabadsag and quoted by Washington Post, January 4, 1989.

^{7/} For a review of the factors explaining the disappointing productivity performance in the USSR, see AER (1986).

IV. MEASURES OF PRICE COMPETITIVENESS

The price competitiveness is defined in this paper as the advantage in price, which may enable a country to secure sales of its products in foreign markets at the expense of its competitors. The advantage will not necessarily guarantee the sales but it will represent a favorable incentive provided to foreign importers to purchase the exporting country's products. The price competitiveness will be measured in this paper in terms of differences in relative export prices, that is differences between export prices of CPEs and (world market) prices of their competitors.

The choice of definition of price competitiveness is not entirely straightforward. Price competitiveness has been measured in the literature on the basis of price comparisons or comparisons based on costs. Neither of these approaches is without shortcomings, and each has some decisive advantages over the other. The concept of price is considered to be more objective and less likely to vary from one exporter to another. Moreover, in addition to flaws discussed above, cost data are not typically built up for individual commodities but they are given for whole plants, companies or group of commodities (Kravis and Lipsey, 1971, p. 43). In contrast, competitiveness measured on the basis of price becomes meaningful only under conditions of market imperfections arising from product differentiation (Enoch, 1978, p. 181). More recently, an attempt has been made by Hotson and Gardiner (1983) to develop a structural model of the UK trade in manufactures which estimates separately price and volume equations and utilizes both relative prices and relative costs.^{8/} For reasons discussed in Section 3 above, the choice of relative prices for the treatment of price competitiveness has decisive advantages over methods based on relative costs, particularly for the analysis of CPEs. This reflects mainly serious distortions in production costs.

V. TREATMENT OF PRODUCT QUALITY

We shall use in this paper highly disaggregated data to ensure that our comparisons refer to as highly homogeneous products (groups) as possible. Nevertheless, our comparisons of unit values continue to be subject to the "index number problem." While the values may ensure concordance with basic definitions of products, they do not capture explicitly differences in product quality.

The theory provides a guidance on the likely impact of product quality of export prices of the CPEs. The theoretical work of Falvey (1979) shows that nontariff barriers to trade (NTBs), orderly market arrangements and voluntary export restraints will raise the relative price of the least-expensive good in the product category subject to NTBs. As a result, importers will be encouraged to increase the quantity of higher-priced products within

^{8/} Hotson and Gardiner (1983) should be also consulted for a brief review of the literature.

the quota-constrained category. As shown by Aw and Roberts (19..), the quality upgrading will lead to a rise in the unit value index for the quota category.

Aw and Roberts have drawn on the index number literature to evaluate the effect of the "product-quality" factor on foreign trade price formation. Following the work of Diewert (1976), they applied the Tornquist indices to separate the effect of quality differences from foreign trade prices. While this is a highly effective method to assess the quality upgrading among different products within a given quota category, the method does not allow to separate the effect of quality differences from prices for given products.

Technical progress is another factor, which affects product quality. It will be reflected in the production of commodities, which embody more advanced technology resulting from technical progress. However, the relationship between technology and export prices is not straightforward. On the one hand, superior technology may result in the production of technologically more advanced commodities that are more attractive to consumers and, consequently, in higher prices. On the other hand, superior technology is likely to be inversely related to production costs, providing a scope for price reductions. Moreover, final export price may depend on the price elasticity of demand. To assume, therefore, that higher export prices reflect superior technology, as it is sometimes done in the literature, ignores the cost or the demand effect of technical progress.

Our approach will be, therefore, as follows. We shall divide commodities into two groups. (A) Products which we believe are not subject to qualitative differences, or for which the qualitative differences tend to be relatively small. This reflects mainly the nature of the commodities but also relatively stricter quality controls, which are applied to these products in international trade. These products include most raw materials, agricultural products, semiprocessed industrial goods such as chemicals or steel products. (B) All other commodities, which are subject to great variations in product quality due to changes in fashion, technical progress, differences in craftsmanship, etc. These products typically include most manufactured goods. We shall expect greater variations in export prices of products of category "B" in comparison to prices of products of category "A" if quality of products indeed differs. More specifically, export prices will have to be lowered for exports of lower quality.

We shall further analyze the price performance of CPEs in markets which are subject to NTBs. We have identified NTBs for individual product categories of CPEs' exports to the EEC market using the EEC tariff nomenclature which was then matched with export categories. Following Falvey, we shall expect higher export prices for products which are subject to NTBs.

We shall also explore the hypothesis that the CPEs were trying to (re)capture greater shares in world markets by lowering their export prices. More specifically, we shall consider the price performance in the case of markets in which the CPEs' share was small relative to those markets in which

the CPEs have performed reasonably well. We shall expect increased price competitiveness rather than greater quality differentiation for exports with low market shares.^{9/}

Finally, we shall assume that reduction in export price will not provoke retaliations of importing countries' governments by adopting anti-dumping measures. Whether this makes our approach an over-simplification or not depends on whether the importing countries' governments perceive the CPEs' exports a real threat or not. Clearly, there is enough evidence to argue that CPEs have traditionally behaved as if they were not constrained by this threat. Even though anti-dumping measures have been applied in the West against CPEs, it has so far been extremely difficult to prove cases of dumping against CPEs.^{10/} Moreover, our point is that the CPEs' exports of manufactures tend to be of lower quality, and the price at which these exports are sold must be correspondingly lower to make them saleable. This also implies that exporters of these products are typically not competitors with domestic producers in strictu sensu.

VI. DATA

The CPEs are defined in this paper as the socialist countries of Eastern Europe. They include Bulgaria, Czechoslovakia, GDR, Hungary, Poland, Romania and the Soviet Union. These socialist countries are treated here as a group rather than individually, which limits our analysis. Unfortunately, individual treatment of each CPE was not possible due to budgetary and time constraints. The disadvantage of this approach is that we aggregate data across different socialist countries and the data are, therefore, affected by the weights of individual countries. In addition, we have aggregated developed and developing countries into two separate groups to provide the basis of our comparisons.

Export prices were estimated on the basis of unit value indices. We have used detailed EEC trade data base, which is defined according to the EEC classification. The calculation of unit value indices was carried out at six-digit level of disaggregation. The indices were calculated for two years: 1982 and 1984. The data on NTBs have been taken from the data bank of the World Bank which provides a detailed description of the methodology.

^{9/}

This relationship between market shares and export prices constitutes our hypothesis. Clearly, other relationships could be hypothesized but they were not tested due to data limitations. As we shall see further below, our own test is rather crude since the data base was not amenable to the appropriate econometric treatment.

^{10/} See, for example, Brown (1987).

VII. ESTIMATION OF UNIT VALUE INDICES

The results of our estimation of the unit value indices of CPEs' exports to highly competitive world markets are shown in Table 2. The relative prices of CPEs' exports to the EEC markets were estimated in two ways: as CPEs' export prices relative to export prices of developed countries (here approximated by EEC countries) and as CPEs' export prices relative to export prices of developing countries in the same markets. The results have been aggregated into three broad commodity groups--agriculture, raw materials and manufactures--with each group showing the relative price performance in more disaggregated subgroups. The results are presented in the form of indices; indices equal to one indicate that relative prices of CPEs were identical to those of their competitors.

Table 2: RELATIVE PRICES OF THE CPEs' EXPORTS TO THE EEC

Product categories	Average ratio of unit values in imports from CPEs to unit values in imports from:			
	Developed countries		Developing countries	
	1982	1984	1982	1984
<u>Agriculture</u>	<u>1.02</u>	<u>1.01</u>	<u>0.89</u>	<u>1.01</u>
Animals	1.13	1.12	0.88	1.01
Vegetable	0.85	0.91	0.74	0.94
Prepared food	0.92	0.85	0.81	1.13
Tobacco & beverages	1.39	1.25	1.11	1.16
Others	1.41	1.41	1.81	0.83
<u>Raw Materials</u>	<u>1.09</u>	<u>0.99</u>	<u>1.42</u>	<u>0.82</u>
Ores	2.11	1.43	1.91	1.64
Mineral fuels	1.08	1.10	0.90	0.88
Wood	0.85	0.77	0.68	0.47
Others	0.96	0.87	1.74	0.67
<u>Manufactures</u>	<u>0.69</u>	<u>0.69</u>	<u>0.81</u>	<u>0.78</u>
Chemicals	0.89	1.02	0.84	0.90
Leather goods	0.70	0.76	0.95	0.84
Rubber goods	0.67	0.64	0.89	0.66
Wood & paper	0.73	0.71	0.68	0.61
Textiles	0.66	0.61	0.82	0.84
Textile articles	0.63	0.61	0.80	0.80
Ceramics	0.80	0.83	0.76	0.75
Iron & steel	0.70	0.74	0.77	0.88
Nonferrous metals	0.63	0.66	0.73	0.86
Mechanical machinery	0.60	0.61	0.91	0.96
Electrical machinery	0.55	0.55	0.68	0.66
Transportation equipment	1.41	1.13	1.08	1.15
Instruments	0.61	0.55	0.83	0.72
Others	0.72	0.58	0.84	0.71
<u>Total</u>	<u>0.75</u>	<u>0.75</u>	<u>0.85</u>	<u>0.82</u>

As the table shows, the CPEs' export prices have been generally lower than those of their competitors and the differences are quite considerable. On average, the relative prices were 25% lower than EEC export prices in both years. In comparison to LDCs' export prices, the EEC export prices were also higher--by 15% and 18%, respectively, in 1982 and 1984. This implies that the average price level of CPEs' exports were even lower than the average level of prices of LDCs in the EEC markets.

This large price discrepancy was almost entirely due to "underpricing" of manufactured exports of CPEs. The average price of CPEs' manufactured exports was more than 30% lower than the corresponding EEC export prices. Moreover, the export prices obtained by CPEs on the EEC market were below the EEC's competitors systematically; the CPEs' export prices were lower in the case of all product groups identified in the table with the only exception of transport equipment. By contrast, CPEs' export prices for agricultural products and raw materials were virtually the same as those of EEC exporters. This is consistent with earlier studies of Marer and others who suggested that prices of primary commodities in intra-CMEA trade have generally been much closer to world market prices than prices of manufactured commodities (Maresse and Vanous, 1983, p. 123).

The results are quite dramatic. The export price performance of the CPEs is inferior not only to that of EEC countries but, even more striking, it appears to be worse than the price competitiveness of the LDCs' exports. The "underpricing" of CPEs' exports relative to prices of their competitors is by no means marginal; the CPEs' export prices were lower than the corresponding EEC exports by as much as 45%, as was the case of exports of electrical machinery. On the level of individual products, the "underpricing" was even larger for many commodities.^{11/}

VIII. SENSITIVITY TESTS

The above results may be sensitive to the degree of aggregation which we chose for their presentation. We have, therefore, carried out a sensitivity test of our results, which is summarized in Table 3. The table shows for developed countries and developing countries, respectively, the distribution of CPEs' relative prices according to predetermined ranges of price differences. The ranges are shown in the first column; the first range identifies relative export prices of CPEs and LDCs, respectively, which lie in the range of 100% to 75% below the comparable prices of competitors. The second range refers to differences in the range of 74% to 50% below the competitors' prices, etc. The results are shown as shares, where the total number of relative prices compared for a given year with the comparator (i.e. EEC and LDCs) is equal to 1.

^{11/} The results for individual commodities are not shown in this paper but can be obtained from the authors on request.

**Table 3: DISTRIBUTION OF PRICE RATIOS: SHARE OF RATIOS
IN A GIVEN RANGE IN THE TOTAL NUMBER OF RATIOS
(Total number of price ratios = 1) /a**

Range	Developed countries		Developing countries	
	1982	1984	1982	1984
0.00-0.25	0.10	0.11	0.14	0.15
0.26-0.50	0.28	0.29	0.22	0.23
0.51-0.75	0.26	0.25	0.22	0.21
0.76-1.00	0.18	0.17	0.19	0.20
1.01-1.25	0.08	0.08	0.10	0.09
1.26-1.50	0.04	0.04	0.05	0.04
1.51-9999	0.07	0.07	0.09	0.09

/a The sums may not add up to 1 due to rounding.

Another sensitivity test was carried out to account for different weights of individual price ratios at the original level of disaggregation. The results of the test are summarized in Table 4. For this test we have eliminated all products which had an EEC market share smaller than 0.01%. In addition, we have also eliminated all price ratios which were smaller than 0.5 and greater than 2. In other words, we have retained in the sample only those products which were exported to the EEC markets at prices 50% below the comparable EEC export prices as well as prices which were double or more of EEC export prices. The idea was to test for the effects of heterogeneity within the given product groups at the original level of disaggregation by eliminating all "outliers," that is price ratios, which characterized large price differences. The table shows for a given product group the average relative price of CPEs' exports and frequency of observations lying in the predetermined price range, defined as ratio R with the value of $0.5 \leq R \leq 2.00$. The test was carried out again for both years.

Table 4: FREQUENCY OF PRICE RATIOS
(0.5 ≤ R ≤ 2.00)

Product range	Product name	Average ratio A (EEC)				Average ratio 30 (LDC)			
		1982	Freq	1984	Freq	1982	Freq	1984	Freq
0101-0599	Live animals	0.89	133	0.92	133	0.98	67	1.00	60
0601-1599	Vegetable	0.93	155	0.92	175	1.00	93	0.94	104
1601-2199	Prepared foodstuffs	0.90	110	0.89	89	0.88	61	0.89	56
2201-2299	Tobacco & beverages 1	1.14	25	1.08	25	1.08	17	1.08	12
2401-2499	Tobacco & beverages 2	0.90	15	0.84	10	0.91	13	1.02	14
2601-2699	Metallic ores	1.34	7	1.06	11	0.99	9	0.93	12
2701-2799	Mineral fuels	1.05	52	0.98	52	0.97	33	0.95	34
2801-3899	Chemicals	0.90	372	0.95	352	0.93	153	0.96	151
3901-4099	Rubber manufactures	0.79	104	0.78	105	0.84	79	0.80	86
4101-4399	Leather goods 1	0.89	37	0.86	33	0.97	38	0.86	38
4401-4404	Wood	0.96	8	0.77	11	0.81	6	0.77	8
4405-4999	Wood & paper	0.84	134	0.82	139	0.84	84	0.87	73
5001-5799	Textiles	0.75	192	0.72	184	0.90	157	0.88	163
5801-6399	Textile articles	0.76	220	0.73	207	0.88	239	0.87	239
6401-6499	Leather goods 2	0.76	21	0.65	25	0.74	23	0.70	24
6901-6999	Glass & pottery	0.85	24	0.79	25	0.75	17	0.72	13
7301-7399	Iron & steel	0.86	193	0.87	199	0.83	117	0.89	101
7401-8399	Nonferrous metals	0.87	122	0.85	112	0.86	108	0.91	92
8401-8499	Mechanical machinery	0.81	200	0.86	172	0.92	152	0.91	149
8501-8599	Electrical machinery	0.82	87	0.81	83	0.84	85	0.92	74
8601-8699	Transport equipment	1.24	7	1.14	6	0.98	2	0.88	3
9001-9200	Instruments	0.95	63	1.00	34	0.97	66	0.90	61
0101-2499	Agriculture	0.93	464	0.93	460	0.98	274	0.95	265
2501-2799	Raw material 1	1.08	77	0.98	79	0.97	54	0.95	57
2801-4099	Manufacture 1	0.87	476	0.91	457	0.90	232	0.91	237
4101-4101	Raw material 2	0.84	5	0.94	5	1.00	3	1.00	4
4102-4399	Manufacture 2	0.89	37	0.86	33	0.97	38	0.86	38
4401-4404	Raw material 3	0.96	8	0.77	11	0.81	6	0.77	8
4405-6799	Manufacture 3	0.77	577	0.75	566	0.88	511	0.87	508
6801-6899	Raw material 4	0.82	20	0.83	18	0.88	12	0.92	10
6901-9906	Manufacture 4	0.86	906	0.85	828	0.89	698	0.91	631
0101-9906	ALL PRODUCTS	0.86	2,570	0.86	2,457	0.90	1,828	0.90	1,758
	Agriculture	0.93	464	0.93	460	0.98	274	0.95	265
	Raw materials	1.01	110	0.93	113	0.94	75	0.93	79
	Manufactures	0.84	1,996	0.84	1,884	0.89	1,479	0.89	1,414
	All products	0.86	2,570	0.86	2,457	0.90	1,828	0.90	1,758

Note: Included only products with market share greater than 0.01% and with price ratio 0.5 ≤ R ≤ 2.00.

The results of our estimations are further strengthened by our sensitivity tests. As Table 3 shows, most CPEs' exports of manufactured goods were lower than prices of EEC or LDCs' exports. The "underpricing" of CPEs' exports is shown to be even more significant if it is simply measured by the frequencies with which individual price differences are found in the given price ranges rather than by average price differences as shown in Table 2. This is reflected in a very large share of price ratios which are found to be in the price range of 0.26-0.50, i.e. corresponding to 74 to 50% underpricing. This in turn may be due to heterogeneity of products even at the original level of disaggregation but once again, the price ratios are almost consistently below 1.

Our sensitivity test reported in Table 4 tells essentially the same story. The CPEs' export prices of agricultural products and raw materials to the EEC markets are not greatly different from either the EEC export prices or LDCs' export prices. Export prices of manufactures remain well below the export prices of CPEs' competitors. Nevertheless, the degree of "underpricing" is reduced, indicating an effect on our estimates of exports that are extremely insignificant in terms of their share in the EEC market.

IX. IMPACT OF EEC PROTECTION ON PRICE COMPETITIVENESS OF CPEs

While the evidence of "underpricing" of CPEs' manufactured exports seems to be very strong, the factors underlying these price differences are far less clear. One factor, which could have forced CPEs to underprice their competitors, might have been trade barriers imposed against CPEs' manufactured exports. We have, therefore, attempted an indirect test of this hypothesis by comparing those relative prices of CPEs' exports which are subject to nontariff barriers (NTBs) with those that are not. The results are shown in Table 5, which summarizes the results for both years and for subgroups of agricultural products, raw materials and manufactures.

Table 5: EFFECTS OF NONTARIFF BARRIERS ON EXPORT PRICES OF CPEs:

	Percentage point difference between average unit value in the EEC imports from CPEs and in imports from:			
	1982		1984	
	N	F	N	F
<u>Developed Countries</u>				
Agriculture	-16	4	-25	3
Raw materials	12	0	13	-6
Manufactures	-35	-29	-33	-29
<u>Total</u>	<u>-33</u>	<u>-22</u>	<u>-32</u>	<u>-23</u>
<u>Developing Countries</u>				
Agriculture	-30	-3	26	-3
Raw materials	3	45	-16	-20
Manufactures	-22	-17	-23	-20
<u>Total</u>	<u>-22</u>	<u>-11</u>	<u>-20</u>	<u>-17</u>

Note: N = products subject to discriminatory NTBs.
F = products free of discriminatory NTBs.

We have chosen to analyze the impact of NTBs rather than that of tariffs because NTBs differ from tariffs in one important respect relevant for our analysis. Unlike tariffs, NTBs are not usually extended on a multilateral basis and the product categories subject to NTBs are very often loosely defined. Countries with exports subject to NTBs are, therefore, relatively better positioned to adjust their exports to the restrictive measures. Moreover, NTBs appear to play a very important part in the set of trade-restrictive measures in the EEC.^{12/}

As the table shows, NTBs appear to have had little impact on the price competitiveness of the CPEs' exports of manufactures. Once again, export prices of manufactures are consistently below the prices of their competitors not only in the case of exports subject to NTBs in the EEC, but also in the case of those exports which were free of discriminatory NTBs. Nevertheless, one systematic difference disappears; the average CPEs' export prices are lower whenever such exports are subject to discriminatory NTBs in comparison to prices of exports to markets that were free of discriminatory NTBs. What interpretation can be attached to these findings is unclear. NTBs appear to play a particularly important role in explaining the price

^{12/} On the extent and profile of NTBs applied by industrial countries against imports from Eastern Europe, see Olechowski (1986).

performance in the case of export of agricultural products and raw materials which on the whole did not show any tendency towards "underpricing." This finding is not surprising since primary commodities are relatively few in numbers and they are much more homogeneous than manufactured products. As a result, primary products are highly dependent on price competitiveness. The effect of NTBs on manufactured exports is likely to be more subdued in view of the important role of nonprice factors in determining the competitiveness of exports. In contrast to the postulates of the theory, however, price increases due to product upgrading is not evident from this analysis. On the contrary, NTBs were correlated with lower export prices of the CPEs.

X. EFFECT OF CPEs' PRICE POLICY

Another factor which could have affected our results might have been the commercial policy of the CPEs to increase their shares in the EEC. The observed "underpricing" of manufactured exports might have been the result of a deliberate policy of socialist countries to penetrate Western markets. The market shares of socialist countries have been seriously eroded in the past in the face of rising competition of not only developed countries but also developing countries. The price responsiveness to declining market shares would imply flexible and generally export-oriented strategy, which are likely to be more successful in maintaining the country's market shares in comparison to inward and generally less-flexible strategies (Bark and de Melo, 1987).

We have, therefore, carried out a detailed analysis of export prices of socialist countries in different markets of the EEC region and tried to ascertain whether market shares exhibited any influence on the price performance of socialist countries. We shall hypothesize that the loss of market shares was most damaging in the case of commodities, which exhibit the greatest quality deficiencies. Pari passu, we shall hypothesize that socialist countries were able to retain the largest market shares in the case of commodities which suffered least from quality deficiencies. The results are summarized in Table 6. The table shows the average relative prices in the two years for exports with different market shares. Only exports which were not subject to discriminatory NTBs were included in the sample.

Table 6: AVERAGE PRICE RATIOS IN MARKET SHARE RANGES /a

Market share	<u>Developed countries</u>		<u>Developing countries</u>	
	1982	1984	1982	1984
0.00-0.05	0.86	0.88	0.96	0.82
0.06-0.10	0.64	0.60	0.77	0.63
0.11-0.25	0.69	0.62	0.71	0.79
0.26-0.50	0.63	0.60	0.74	0.62
0.51-1.00	0.78	0.63	1.21	0.76

/a Including only products which were not subject to discriminatory NTBs.

As the table shows, there does not appear to be any systematic relationship for any given export commodity between the level of relative prices, that is the export prices of socialist countries relative to those of their competitors, and the market share of that commodity. Prices of socialist countries' exports were generally lower than the prices of their competitors, irrespective of the market share. To put it differently, the relative "underpricing" of socialist countries' exports in the EEC market was characteristic across all market share ranges and not only in markets where their share was small.

The degree of "underpricing" differed from one market share range to another, but this pricing behavior undoubtedly reflected balance of payments exigencies as much as a systematic policy to penetrate those Western markets that had been partially lost in the past. The socialist countries responded aggressively to the generally deteriorating balance of payments situation during that period by expanding export volumes even when export markets were depressed and prices were falling. Temporarily, at least, their supply curve was quite likely downward sloping.^{13/} Moreover, their effort to secure foreign markets by relative "underpricing" of their exports was directed not only into those exports that suffered from major quality deficiencies, but also into exports that were fairly competitive.^{14/}

^{13/} The extent to which the price behavior represented a movement along a (downward) sloping supply curve or a shift in the supply curve is not entirely clear. The indications are, however, that the former was more likely. For evidence, see for example Financial Times, October 5, 1982, p. 5 and Stepanek (1988).

^{14/} As a result of their aggressive behavior, several socialist countries faced increased number of court actions for dumping, some of which resulted in the imposition of antidumping duties. Viz., for example, the imposition of antidumping duty of almost 30% by the EEC on East German chemical exports. Romania undertook to raise its export prices of chemicals to eliminate the injury to Community producers. See Financial Times, August 18, 1982, p. 5.

What we are suggesting is that the relative "underpricing" within the aggregate group of manufactured goods was random; that is there does not appear to be any evidence of obvious and systematic "underpricing" of a specific group of manufactured goods. We have found no unambiguous evidence to suggest systematic "underpricing" of "low-technology" exports as argued by some East European economists (e.g. Rod and Hejl, 1982). We have found even no evidence of systematic "underpricing" of "high-technology" exports, for which such a pricing policy could be suspected most (see Tables 2 and 4 above). The "high-technology" exports would have been a prime candidate for price discounts due to their traditionally worst performance in world markets (Drabek, 1983). In sum, the general feature of the price performance in the EEC markets was "underpricing" of manufactured exports as a group, and there is no clear evidence to suggest that price discounts were offered on "high-technology" exports only. The fact that relative "underpricing" by socialist countries was found across the whole spectrum of their manufactured exports strengthens the importance of poor quality of export products in the correspondingly poor performance manufactured exports.

XI. SUMMARY AND CONCLUSIONS

We have analyzed the price performance of the CPEs in the highly competitive export markets of the EEC countries in the first half of the 1980s. We have found that the CPEs' export price have been generally lower in comparison to export prices of developed countries as well as those of the less developed countries (LDCs). This was almost entirely due to lower prices of manufactured exports while the CPEs' price performance in agricultural markets and markets for raw materials has been considerably better. The average rate of "underpricing" manufacturing exports was 31% in both 1982 and 1984 but for some commodity groups it was as high as 45%. The level of "underpricing" turned out to be even greater on the level of some individual commodities. These results are fully consistent with results of earlier studies indicating that the degree of "underpricing" of manufacturing exports has not changed over the past two decades.

The role of commercial considerations in export decisions of the CPEs to competitive markets is evident and strong. CPEs have been criticized in the past for failing to capture their opportunities in world markets. The underpricing of their exports, which we have observed in this study, does not appear to be explainable by the lack of commercial considerations. Exports of raw materials, food and even some manufactured goods tended to be sold at world market prices, as one would expect from profit-maximizing firms in competitive markets characterized by perfectly homogeneous products and as observed in the literature (e.g. Wipf and Brada, 1975).

Protection of the EEC countries is also a highly unlikely factor to explain the relative underpricing of the CPEs' manufacturing exports. Typically, NTBs should result in CPEs' prices higher relative to those of their competitors, assuming that the competitors' exports are subject to lower or no NTBs. If the CPEs' exports were indeed subject to a higher level of protection, as has been often claimed by the CPEs, they should have been able to

upgrade their manufacturing exports and, consequently, increase their export prices. However, as our results show, the CPEs' performance was exactly the opposite; their prices for manufacturing exports subject to NTBs were below the prices of their competitors.

While there appears to be no doubt about both the existence and even the magnitude of underpricing of the manufacturing exports of the CPEs to competitive markets, the interpretation of these results are less straightforward. Nevertheless, the indications are very strong to suggest that most if not all of the relative "underpricing" of manufacturing exports was due to lower quality rather than cost advantages and, therefore, pure price competitiveness. The systematic "underpricing" was characteristic for manufacturing exports, which are generally subject to great variations in quality and product differentiation, but not for exports of raw materials and agricultural products, which are generally much more homogeneous. Moreover, the CPEs' price performance in protected markets indicates their inability to upgrade their exports of products subject to quotas, which also suggest serious quality constraints.

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